

the month of June occupied the central northern portion of Hindostan, moved to the eastward, and during July is found over the Province of Scinde, the mean for the latter month exceeding that of the former at all the India stations except Agra, Bombay, Deesa and Kurrachee. The west monsoons and heavy rains which set in along the Bombay coast during June increased throughout July, the rainfalls at the stations Bombay and Poona, for these months, being, respectively, for June, 19.82 and 1.94 inches, and July, 48.24 and 10.53 inches. Along the Bengal coast the southerly monsoons continued to blow throughout the month, while in the upper valley of the Ganges, the Northwestern Provinces, the northwesterly winds of June gave way to the easterly winds of July. Over Siberia and Russia the lowest pressures are found at Kasan and Ekaterinburg, around which stations a decidedly circular motion of the winds is observable.

On chart No. VI are traced the paths of the principal storm areas which traversed the northern hemisphere during the month of July, 1878. The general distribution of these tracks agrees with the areas of mean low pressure shown on chart No. V, while their general direction is easterly, inclining towards the northeast over the oceans and towards the southeast over the land areas. The tracks over the Behring sea region and Alaska are based upon tri-daily observations at St. Michael's and St. Paul's Island, and are probably nearly correct, while the succession of meteorological changes occurring at these stations, at those in Washington Territory, and at York Factory, B. A., indicate a connection between some of these areas and those moving eastward over British America.

TEMPERATURE OF THE AIR.

The general distribution of temperature for February, 1880, is shown by the isothermal lines on chart No. II. As in the preceding month the temperature continued above the normal in all districts east of the 100th meridian, and many reports show that it has been the warmest February which has occurred in many years in the eastern districts of the United States. The temperature has fallen at the Rocky Mountain stations and in the districts on the Pacific coast, where it has ranged from 2° to 6° below the normal. An excess of 6°.5 is reported in the Lower Lake region and 6°.2 in the Middle States. In the western portion of the continent, especially in the northern districts, the temperature has been unusually low. The table of comparative temperatures for the several districts is printed on the right side of chart No. II.

The following notes are of interest as indicating the unusually high temperatures of the month in various sections: Houston, Ala., mildest winter for many years, the present month unusually warm. Sandy Springs, Md., month exceptionally warm. Waltham, Mass., mean temperature of the month 5° above the average. Westborough, Mass., remarkably mild month. Fall River, Mass., month unusually warm, no frost in ground. Litchfield, Mich., month very warm, frost entirely out of ground. Brookhaven, Miss., month unusually warm. Grafton, N. H., from the 10th to the 29th month unusually warm, five heavy thaws occurring during that period. Palermo, N. Y., warmest February in past 12 years. Cleveland, Ohio, warmest February in past 25 years, excepting 1857. Snowville, Va., month very warm and dry.

Minimum Temperatures.—*Maine*: —15° at *Orono and —12° at Eastport. *New Hampshire*: —27° on summit of Mt. Washington and —21° at *Dunbarton. *Vermont*: —22° at *Strafford and —12° at Burlington. *Massachusetts*: —20° at *Billerica, —5° at Boston and —6° at Springfield. *Rhode Island*: 2° at Newport. *Connecticut*: 2° at New Haven and New London. *New York*: —20° at *Schroon Lake, 1° at Buffalo, 2° at Oswego, —7° at *Ithaca, —10° at Albany and 10° at New York city. *Pennsylvania*: —12° at *Wellsboro, 2° at *Catawissa, 10° at Pittsburg and 12° at Philadelphia. *Delaware*: 18° at *Dover. *Maryland*: 0° at *Cumberland, 11° at *Woodstock, *Fallston, *Owing's Mills and *Sandy Springs and 15° at Baltimore. *District of Columbia*: 14° at Washington. *Virginia*: —1° at *Mt. Solon, 18° at Lynchburg and 22° at Norfolk. *West Virginia*: —3° at *Helvetia and 3° at Morgantown. *North Carolina*: 15° at *Franklin and *Highlands, 30° at Wilmington, and 33° at Cape Lookout. *South Carolina*: 36° at Charleston, and 31° at *Aiken. *Georgia*: 25° at *Gainesville and 31° at Atlanta, *Forsyth and *Thomasville. *Florida*: 34° at *Houston, 36° at Pensacola, 52° at Punta Rasa and 64° at Key West. *Alabama*: 28° at *Green Springs and 34° at Mobile. *Mississippi*: 27° at *Fayette and 31° at Vicksburg. *Louisiana*: 22° at *Okalooska, 29° at Shreveport and 43° at New Orleans. *Texas*: —1° at Ft. Elliott, 10° at Pilot Point, 19° at Ft. McKavett, 24° at Stockton and 37° at Edinburg and Brownsville. *Ohio*: 3° at *Bellefontaine, 19° at Cincinnati and 11° at Columbus, Cleveland and Toledo. *Kentucky*: 12° at *Bowling Green and 22° at Louisville. *Tennessee*: 7° at *Austin, 11° at Nashville, 25° at Memphis, and 28° at Chattanooga. *Arkansas*: 16° at *Mt. Ida and 32° at Little Rock. *Michigan*: —12° at Escanaba, —8° at Alpena and Marquette, 6° at Port Huron, 9° at Grand Haven and 11° at Detroit and *Lansing. *Indiana*: 7° at *New Corydon, 11° at Ft. Wayne, 14° at Indianapolis and 18° at *New Harmony. *Illinois*: —2° at *Geneseo and *Riley, 12° at Chicago, 13° at Springfield and 23° at Cairo. *Missouri*: 2° at *Corning and *Oregon, 7° at *Kansas City and 14° at St. Louis. *Kansas*: —4° at Dodge City, —3° at Ft. Leavenworth, 4° at *Manhattan and 8° at *Lawrence. *Wisconsin*: —20° at *Embarrass, —19° at *Neillsville, —5° at La Crosse and 0° at Madison. *Iowa*: —12° at *Cresco and *Nora Springs, —6° at *Glenwood, 1° at Des Moines, 2° at Dubuque and 9° at Keokuk. *Nebraska*: —23° at *Ft. Sidney, —8° at North Platte and *Ft. McPherson, and 0° at Omaha. *Indian Territory*: 15° at Ft. Gibson and 17° at Ft. Sill. *Minnesota*: —28° at *Breckenridge, —22° at Duluth and —18° at St. Paul. *Dakota*: —35° at Pembina, —23° at Deadwood, and —14° at *Morriston. *Colorado*: —17° at *Ft. Collins, —16° at *Hermosa and —8° at Denver. *New Mexico*: —3° at Santa Fé, 9° at Socorro, 17° at La Mesilla. *Wyoming*: —28° at *Ft. Fred Steele and —10° at Cheyenne. *Utah*: —19° at *Coalville and 3° at St. Lake City. *Nevada*: —26° at *Boca

and 5° at Winnemucca and *Carson City. *Arizona*: —11° at Prescott, —1° at Apache, and 25° at Yuma and Phoenix. *Idaho*: —13° at *Ft. Hall and 11° at Boise City. *Montana*: —28° at Virginia City. *California*: 18° at Campo, 24° at Visalia, 27° at Red Bluff, 35° at San Diego and 38° at San Francisco. *Oregon*: 14° at Umatilla, 20° at Roseburg and 26° at Portland. *Washington Territory*: 25° at Olympia.

Those marked with * are reported by Voluntary Observers or U. S. Army Post Surgeons.

Maximum Temperatures.—*Maine*: 58° at Portland and 45° at Eastport. *New Hampshire*: 56° at *Grafton and 40° on summit of Mt. Washington. *Vermont*: 56° at *Charlotte and 53° at Burlington. *Massachusetts*: 66° at *Somerset, 64° at Boston and 62° at Springfield. *Rhode Island*: 56° at Newport. *Connecticut*: 65° at New Haven and 62° at New London. *New York*: 66° at *Schroon Lake, 65° at New York city, 57° at Buffalo, 61° at *Ithaca and 58° at Albany. *Pennsylvania*: 72° at Pittsburg, 69° at *Catawissa, and 67° at Philadelphia. *Delaware*: 70° at *Dover. *Maryland*: 68° at *Woodstock and *Cumberland and 67° at Baltimore. *District of Columbia*: 70° at Washington. *Virginia*: 80° at *Johnsontown, 78° at Norfolk and 70° at Lynchburg. *West Virginia*: 71° at Morgantown and 68° at *Helvetia. *North Carolina*: 81° at Wilmington and *Weldon, 67° at Cape Lookout and 65° at *Highlands. *South Carolina*: 78° at *Aiken and Charleston. *Georgia*: 82° at *Thomasville, 81° at Augusta and 80° Savannah. *Florida*: 90° at *Houston, 83° at Key West, 81° at Jacksonville and 79° Punta Rassa. *Alabama*: 79° at and 77° at Mobile. *Mississippi*: 82° at Vicksburg and 79° at *Brookhaven. *Louisiana*: 83° at *Oka-looska, 78° at Shreveport and 77° at New Orleans. *Texas*: 91° at Rio Grande, 87° at Concho and Castroville, 82° at Stockton, 78° at Ft. Elliot, and 76° at Denison and Henrietta. *Ohio*: 69° at Bellefontaine and *Wooster, 67° at Cincinnati and 64° at Toledo. *Kentucky*: 69° at Bowling Green and Louisville. *Tennessee*: 78° at Knoxville and 74° at Memphis, *McMinnville and Chattanooga. *Arkansas*: 75° at Little Rock and 72° at *Mt. Ida. *Michigan*: 66° at *Niles, 64° at *Lansing, 60° at Detroit, 58° at Alpena and Grand Haven, 50° at Marquette and 40° at Escanaba. *Indiana*: 69° at *New Corydon and *Logansport, and 65° at Indianapolis, *Spiceland and *New Harmony. *Illinois*: 73° at *Anna, 68° at Cairo, 67° at Springfield and 63° at Chicago. *Missouri*: 72° at *Frankford and *Pierce City, and 71° at Kansas City and St. Louis. *Kansas*: 77° at *Independence, 71° at *Yates Center, 70° at Dodge City and 67° at Leavenworth. *Wisconsin*: 58° at *Beloit, 56° at La Crosse, 55° at Madison and 40° at *Embarrass. *Iowa*: 68° at Des Moines, 37° at Keokuk, 60° at *Glenwood and 59° at Dubuque. *Nebraska*: 68° at Ft. *McPherson, and 66° at *Ft. Sydney, North Platte and Omaha. *Indian Territory*: 79° at Ft. Sill and 75° at Ft. Gibson. *Minnesota*: 59° at St. Paul, 52° at Duluth, and 49° at Breckenridge. *Dakota*: 70° at *Morriston, 55° at Deadwood and 36° at Pembina. *Colorado*: 60° at Ft. *Collins, 59° at Denver and 48° at *Hermosa. *New Mexico*: 74° at La Mesilla, 66° at Socorro and 51° at Santa Fe. *Wyoming*: 59° at Cheyenne and 52° at *Ft. Fred Steele. *Utah*: 45° at Salt Lake City and *Coalville. *Nevada*: 53° at Carson City and 50° at Winnemucca. *Arizona*: 77° at Tucson, 73° at Yuma and 53° at Prescott. *Idaho*: 55° at Ft. Hall and 53° at Boise City. *Montana*: 40° at Virginia City. *California*: 70° at Los Angeles, 39° at Red Bluff, 64° at Sacramento and Visalia, 63° at San Diego and Campo, and 62° at San Francisco. *Oregon*: 53° at Umatilla, 52 at Portland and 51° at Roseburg. *Washington Territory*: 49° at Olympia.

Those marked with a star (*) are reported by Voluntary Observers or U. S. Army Post Surgeons.

Ranges of Temperatures at Signal Service stations.—The monthly ranges will appear from an examination of the maxima and minima just given. The greatest daily ranges vary in New England from 32° at Thatcher's Island, 35° at New Haven and Newport to 46° on the summit of Mt. Washington. Middle Atlantic States, 24° at Baltimore, Philadelphia and Sandy Hook to 36° at Albany and Norfolk. South Atlantic States, 21° at Cape Lookout, 25° at Jacksonville, Charleston and Atlanta to 32° at Augusta. Eastern Gulf States, 11° at Key West, 19° at New Orleans, 25° at Cedar Keys to 27° at Montgomery. Western Gulf States, 23° at Galveston, 29° at Vicksburg, 31° at Little Rock to 41° at Corsicana. Ohio valley and Tennessee, 26° at Cincinnati and Cairo, 31° at Chattanooga 35° at Pittsburg to 37° at Morgantown. Lower Lake region, 31° at Oswego, Erie and Toledo to 37° at Rochester. Upper Lake region, 25° at Chicago, 32° at Marquette, 38° at Duluth to 42° at Alpena. Upper Mississippi valley, 26° at Dubuque, 36° at St. Paul, 38° at St. Louis to 46° at Keokuk. Red River of the North valley, 45° at Pembina to 47° at Breckenridge. Missouri valley, 32° at Omaha, 44° at Leavenworth to 51° at North Platte. Texas, 33° at Eagle Pass, 45° at Fredericksburg, 41° at Stockton, 40° at Rio Grande City to 64° at Fort Elliott. Eastern Rocky Mountain Slope, 37° at Fort Gibson, 40° at Dodge City to 44° at Fort Sill. Rocky Mountains, 33° at Cheyenne, 40° at Denver to 43° at Santa Fe. Middle Plateau 25° at Salt Lake City to 36° at Winnemucca. California, 21° at San Francisco, 28° at Sacramento, 30° at Red Bluff to 34° at Los Angeles.

Frost—was reported very generally from all States and Territories north of the 37th parallel. In Florida on the 4th and 16th, and in the remaining States of the Eastern Gulf, 3rd, 4th, 6th, 7th, 9th, 10th, 14th, 15th, 16th, 22nd. Western Gulf States, 1st to 6th, 13th, 14th, 15th, 16th, 18th, 19th, 28th, 29th. At Henrietta, Texas, on the 28th peach blossoms reported killed by frost. Indian Territory, 1st, 4th, 5th, 6th, 7th, 9th, 14th, 21st, 23rd. California, 1st to 4th, 6th to 20th, 28th and 29th.

Ice—was reported generally throughout the northern sections of the country, as will be seen by reference to the chapter on Navigation. In North Carolina it formed on the 4th, 5th, 7th, 8th, 16th, 20th, 21st. Tennessee, 2nd, 4th, 5th, 6th, 7th, 15th, 19th, 20th; Memphis, 3rd, Gayoso Bayou frozen over. Texas, 4th, 5th, 6th, 7th, 19th, 28th, 29th. California, San Francisco, 11th, 16th, 17th, 19th, 20th.

Ground Frozen.—San Francisco, 16th; Pilot Point, Tex., 28th, 1 in.; Cairo, Ill., 29th; Melissa, Tex., 4th, 5th, 6th, 7th, 28th, 29th.